In The Claims

Please amend the claims as follows:

1. (currently amended) An apparatus for measuring at least one parameter of a process flow flowing within a pipe, the apparatus comprising:

at least two ~~pressure~~ strain sensors clamped onto the outer surface of the pipe at different axial locations along the pipe, each of the ~~pressure~~ strain sensors providing a respective ~~pressure~~ strain signal indicative of a pressure disturbance within the pipe at a corresponding axial position, each of the ~~pressure~~ strain sensors comprising:

a strap, and

~~a~~ piezoelectric film material having a pair of conductors disposed on opposing surfaces thereof ~~sensor~~ whereby the piezoelectric film is attached to the strap; and

a signal processor , responsive to said ~~pressure~~ strain signals, which provides a signal indicative of at least one parameter of the process flow flowing within the pipe.

2. (original) The apparatus of claim 1, wherein the process flow is one of a single phase fluid and a multi-phase mixture.

3. (currently amended) The apparatus of claim 1, wherein the piezoelectric film material ~~sensor~~ is attached to the outer surface of the strap and/or the inner surface of the strap.

4. (original) The apparatus of claim 1, wherein the strap is a metallic material.

5. (currently amended) The apparatus of claim 1, wherein at least one of the strain sensors include an attachment device for securing the ends of the strap of the strain sensor to clamp the strain sensor onto the pipe. ~~further includes a clamping device for attaching the ends of one of the pressure sensors to clamp the pressure sensor onto the pipe~~.

6. (currently amended) The apparatus of claim 1, wherein the ends of at least one of the ~~pressure~~ strain sensors are removably attached together to enable the removable and reattachment to a pipe.~~clamped to the pipe.~~

7. (currently amended) The apparatus of claim 1, wherein the ends of at least one of the ~~pressure~~ strain sensors are permanently attached together.~~clamped to the pipe.~~

8. (currently amended) The apparatus of claim 1, wherein the piezoelectric film material ~~sensor~~ includes at least one of polyvinylchlorine fluoride (PDVF), polymer film and flexible PZT.

9. (Canceled)

10. (currently amended) The apparatus of claim ~~9~~1, wherein each of the pair of conductors is a coating of silver ink.

11. (currently amended) The apparatus of claim 1, wherein the piezoelectric film material extends around a substantial portion of the circumference of the pipe.

12. (currently amended) The apparatus of claim 1, wherein the piezoelectric film material has a thickness greater than 8 mm.

13. (currently amended) The apparatus of claim 1, wherein the piezoelectric film material has a thickness between 8 mm and 120 mm.

14. (currently amended) The apparatus of claim 1, further includes an electrical insulator between the piezoelectric film material and the strap.

15. (currently amended) The apparatus of claim 1, wherein the ~~pressure~~ strain signals are indication of acoustic pressures propagating within the pipe.

16. (original) The apparatus of claim 1, wherein the parameter of the fluid is one of steam quality or "wetness", vapor/mass ratio, liquid/solid ratio, volumetric flow rate, mass flow rate, size of suspended particles, density, gas volume fraction, and enthalpy of the flow.

17. (currently amended) The apparatus of claim 1, wherein the signal processor determines the slope of an acoustic ridge in the ~~k-w plane~~ k-ω plane to determine a parameter of the process flow flowing in the pipe.

18. (currently amended) The apparatus of claim 1, wherein the ~~pressure~~ strain signals are indication of vortical disturbances within the fluid flow.

19. (original) The apparatus of claim 18, wherein the parameter of the fluid is one of velocity of the process flow and the volumetric flow of the process fluid.

20. (currently amended) The apparatus of claim 1, wherein the signal processor determines the slope of a convective ridge in the ~~k-w plane~~ k-ω plane to determine the velocity of the fluid flowing in the pipe.

21. (original) The apparatus of claim 1, wherein the signal processor determines the volumetric flow rate of the fluid flowing in the pipe in response to the velocity of the fluid.

22. (currently amended) The apparatus of claim 1, wherein the signal processor generates a flow velocity signal indicative of the velocity of the fluid flowing within the pipe by cross-correlating the ~~pressure~~ strain signals.

23. (original) The apparatus of claim 1 wherein each sensor measures an acoustic pressure and provides a signal indicative of an acoustic noise within the pipe.

24. (currently amended) The apparatus of claim 1 further comprising at least three of said ~~pressure~~ strain sensors.

25. (new) The apparatus of claim 1, wherein the strain sensors include pressure sensors.

26. (new) A strain sensor for clamping onto the outer surface of the pipe to provide a respective strain signal indicative of a pressure disturbance within the pipe; said strain sensor comprising:

a strap, and

piezoelectric film material having a pair of conductors disposed on opposing surfaces thereof wherein the piezoelectric film material is attached to the strap.

27. (new) The sensor of claim 26, wherein the piezoelectric film material is attached to the outer surface of the strap and/or the inner surface of the strap.

28. (new) The sensor of claim 26, wherein the strap is a metallic material.

29. (new) The sensor of claim 26, wherein the strain sensor includes an attachment device for securing the ends of the strap of the strain sensor to clamp the strain sensor onto the pipe.

30. (new) The sensor of claim 26, wherein the ends of the strain sensor are removably attached together to enable the removable and reattachment to a pipe.

31. (new) The sensor of claim 26, wherein the ends of the strain sensor are permanently attached together.

32. (new) The sensor of claim 26, wherein the piezoelectric film material includes at least one of polyvinylchlorine fluoride (PDVF), polymer film and flexible PZT.

33. (new) The sensor of claim 26, wherein each of the conductors is a coating of silver ink.

34. (new) The sensor of claim 26, wherein the piezoelectric film material extends around a substantial portion of the circumference of the pipe.

35. (new) The sensor of claim 26, wherein the piezoelectric film material has a thickness greater than 8 mm.

36. (new) The sensor of claim 26, wherein the piezoelectric film material has a thickness between 8 mm and 120 mm.

37. (new) The sensor of claim 26, further includes an electrical insulator between the piezoelectric film material and the strap.